

## PATENT ABSTRACTS OF JAPAN

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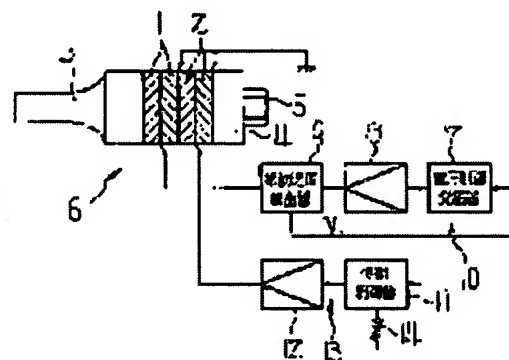
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(54) ULTRASONIC VIBRATOR TRANSDUCER AND COMPOSITE VIBRATION GENERATING  
ULTRASONIC VIBRATOR TRANSDUCER

(57)Abstract:

**PROBLEM TO BE SOLVED:** To provide an ultrasonic vibrator transducer which can continuously, stably and completely match respective resonance frequencies even when a plurality of different resonance elements exist in one vibrator.

**SOLUTION:** The ultrasonic vibrator transducer 6 is provided with a frequency variable means 13 for forcibly changing the resonance frequency of the vibrator transducer 6 by impressing the voltage offset in the phase angle at the same frequency as the frequency of the voltage to be impressed to a main piezoelectric elements 1 to at least a pair of remaining sub-piezoelectric elements 2 when the vibrator transducer is vibrated by impressing the driving voltage to  $\geq 1$  pair of the main piezoelectric elements 1, by which the resonance frequencies of the vibrator transducers 6 are forcibly offset to the arbitrary frequencies and the stable vibration by automatic tracking is made possible. Consequently, if this vibrator transducer is applied to the case the plural vibrator transducers are driven at the same frequency as with, for example, an ultrasonic power synthesizer, the efficient and stable operation is realized by easily matching the frequencies.



## LEGAL STATUS

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converted registration]

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the block diagram of the ultrasonic vibrator in which the gestalt of operation of the first of this invention is shown.

[Drawing 2] It is the block diagram of the ultrasonic vibrator in which the gestalt of operation of the second of this invention is shown.

[Drawing 3] It is the block diagram of the ultrasonic vibrator in which the gestalt of operation of the third of this invention is shown.

[Drawing 4] It is the block diagram of the ultrasonic vibrator in which the gestalt of operation of the fourth of this invention is shown.

[Drawing 5] It is the block diagram of the ultrasonic vibrator in which the gestalt of operation of the fifth of this invention is shown.

[Drawing 6] It is the circuit diagram showing the example of a configuration of the inductance adjustable circuit.

[Drawing 7] It is the block diagram of the coupling oscillation child who shows the gestalt of operation of the sixth of this invention.

[Drawing 8] It is the block diagram of the coupling oscillation child who shows the gestalt of operation of the seventh of this invention.

[Drawing 9] It is the block diagram of the coupling oscillation child who shows the gestalt of operation of the eighth of this invention.

[Drawing 10] It is the block diagram of the coupling oscillation child who shows the gestalt of operation of the ninth of this invention.

[Drawing 11] It is the block diagram of the coupling oscillation child who shows the gestalt of operation of the tenth of this invention.

[Drawing 12] It is the block diagram showing a common ultrasonic power composition machine.

[Drawing 13] It is the block diagram showing the conventional T-L mold coupling oscillation child.

[Drawing 14] It is the block diagram showing the conventional run undergarment mold B-L mold coupling oscillation child.

[Description of Notations]

1 The Main Piezoelectric Device

2 SubPiezoelectric Device

13 Frequency Adjustable Means

24 Frequency Adjustable Means

48 Frequency Adjustable Means

53 Frequency Adjustable Means

81 Adjustable Means

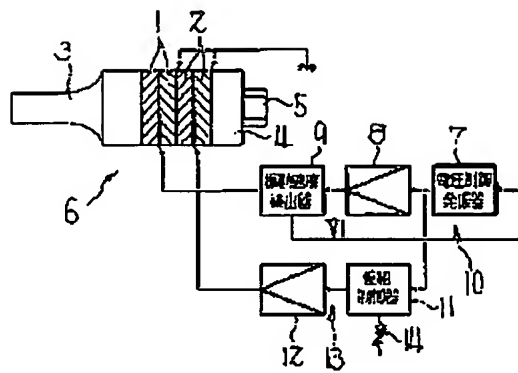
85 Adjustable Means

87 Control Means

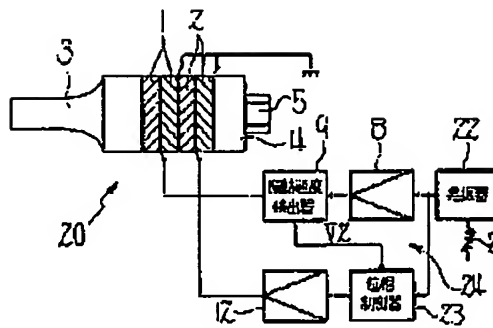
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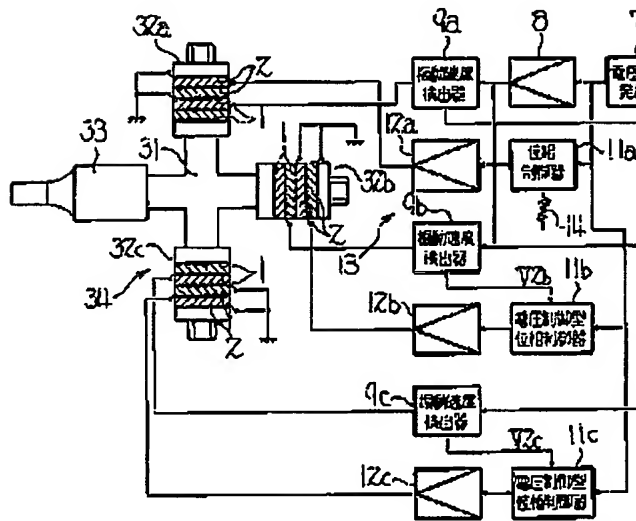
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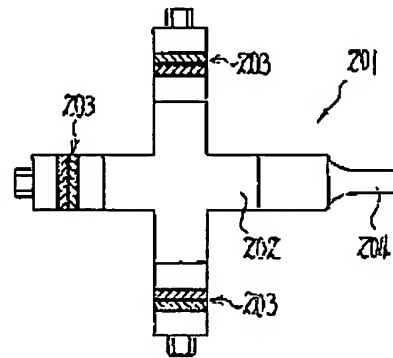
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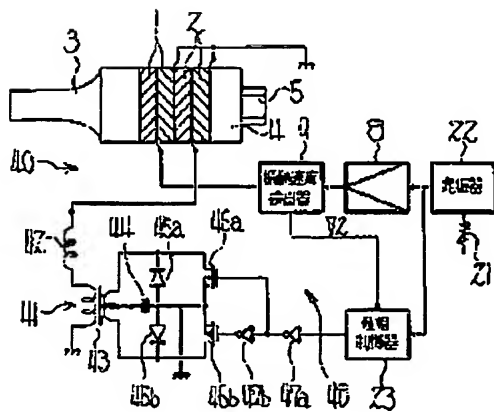
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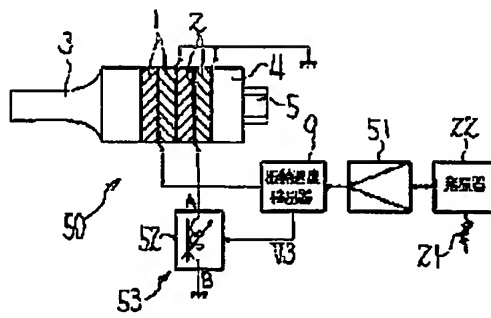
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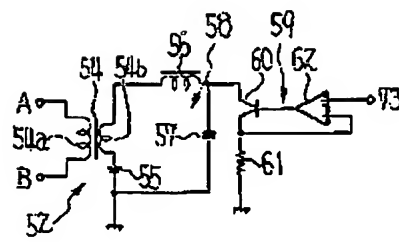
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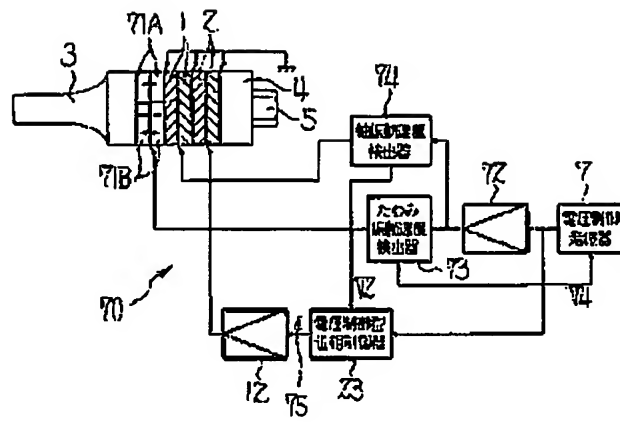
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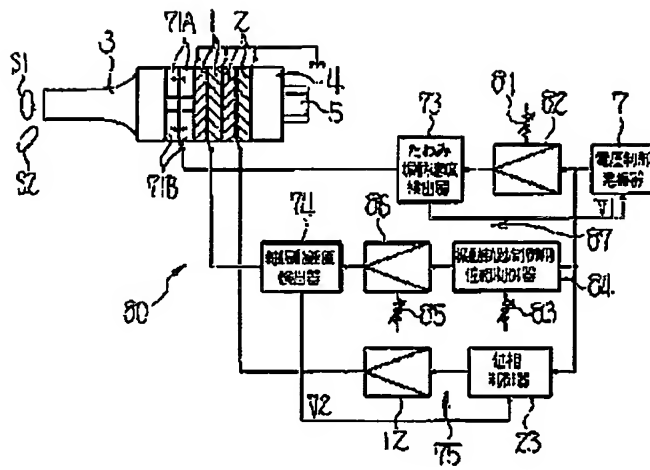
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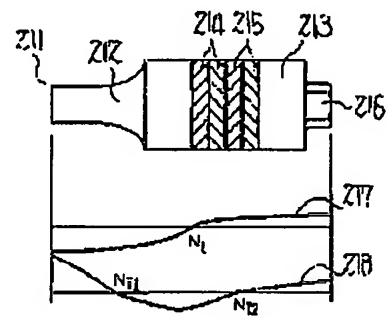
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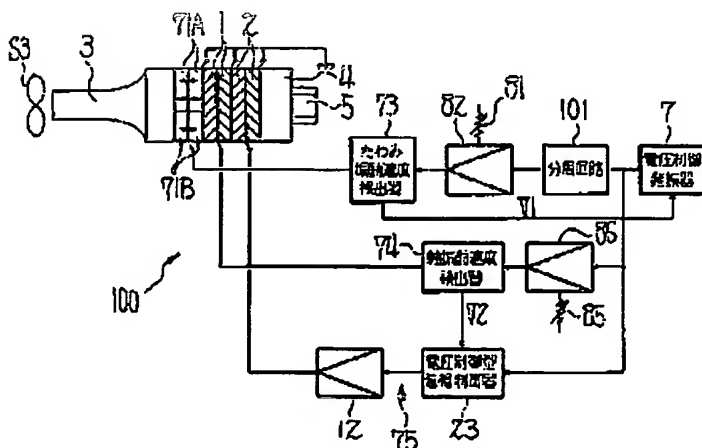
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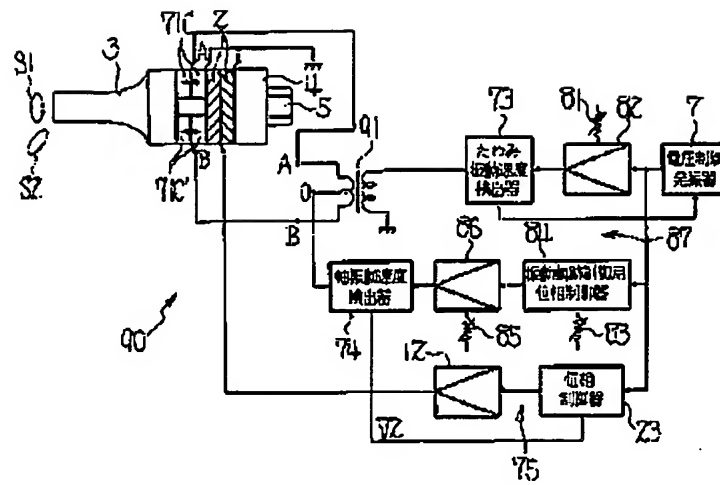
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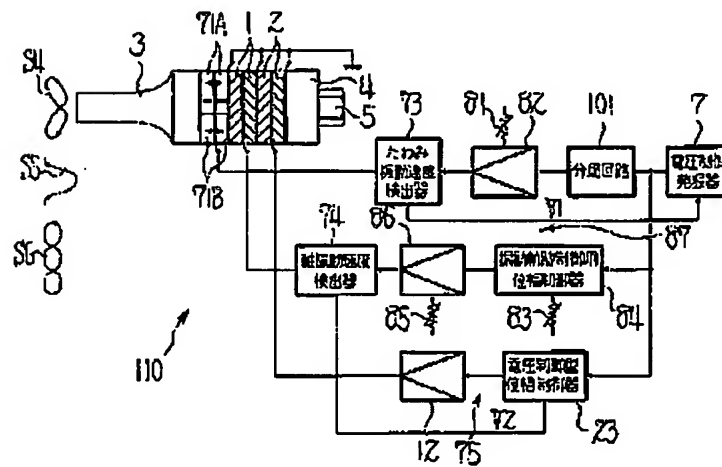
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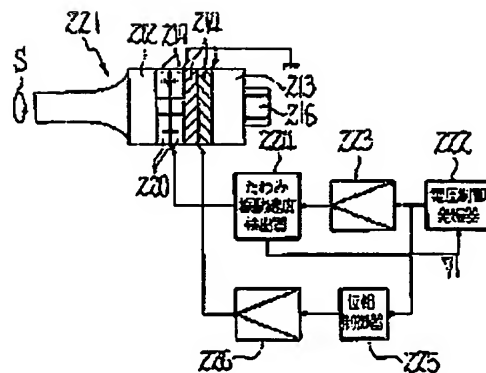
【図9】



【図11】



【図14】



フロントページの続き

Fターム(参考) 5D107 AA03 AA07 AA09 AA14 BB01  
CC04 CC06 CC12 CD02 CD04  
CD06 FF03  
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